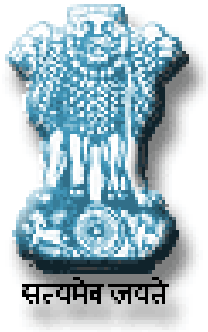

Government of India
Ministry of Railways
(Railway Board)

DRAFT SPECIFICATION

FOR

FOR MINIATURE,TRACTIVE ARMATURE, A.C. IMMUNE, D.C.BIASED TRACK RELAY, PLUG-IN TYPE FOR RAILWAY SIGNALLING PURPOSES

No. RDSO/SPN-84
Style 'QBAT', 9 ohm

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Specification No. **RDSO/SPN/084**
Issued by

SIGNAL DIRECTORATE
RESEARCH DESIGNS & STANDARDS ORGANISATION
MINISTRY OF RAILWAYS
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DOCUMENT CONTROL SHEET

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LIST OF ABBREVIATION USED

Abbreviations	Details
QBAT	Q-Series Biased AC immunized Track Relay
AC	Alternating Current
DC	Direct Current
KV	Kilo- Volt
M	Mega
LH	Left Hand
RH	Right Hand
A	Ampere
m s	Milli- second
P.U.	Pick up
BRS	British Railway specification
^{0}C	Degree Centigrade
V	Volt
R	Resistance
SL-17	Signal lamp-17
m a	Milli Ampere
CPS	Cycle per second
BS	British Standard

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RDSO/SPN/084		Version 2.0
Title of Document **Specification For MINIATURE,TRACTIVE ARMATURE, A.C. IMMUNE, D.C.BIASED TRACK RELAY, PLUG-IN TYPEFOR RAILWAY SIGNALLING PURPOSES**		
Authors: **M.Mehrotra** **Designation: Exe. Director/Signal, RDSO**		
Approved by **Name: Shri Mahesh Mangal** **Designation: Sr. Executive Director/Signal, RDSO**		
Abstract This document defines specification for **MINIATURE,TRACTIVE ARMATURE, A.C. IMMUNE, D.C.BIASED TRACK RELAY, PLUG-IN TYPEFOR RAILWAY SIGNALLING PURPOSES**		

1. FORWORD

1.1 The relays covered by this specification are meant for use on 25KV AC electrified sections of Indian Railways.

1.2 These relays must not be used to break circuits in which the energy dissipated at the contact exceeds the limit given in Clause 12.1. The attention of the user is drawn to the limitations of performance expressed in clause 18 of this specification.

2. SCOPE

2.1 This specification relates to design requirements for miniature tractive armature AC immune DC biased track relays of the plug-in-type for use in Railway signalling circuits irrespective of the presence of alternating current in the control circuit. This relay will operate with positive polarity applied to terminal R1.

3. DEFINITIONS

3.1 For the purpose of this specification, the following definitions shall apply:-

Operate	:	That condition of the relay when both front contacts are just made.
Full operate	:	That condition of the relay when the armature has completed its maximum travel.
Release	:	That condition of the relay when both front contacts have opened.
Full release	:	That condition which the relay assumes when de-energized.
Front contact	:	A contact which is made when relay is energized.
Back contact	:	A contact which is made when the relay is energized.
Contact element	:	The contact piece which is attached to a contact spring.
Contact spring	:	The spring strip to the end of which the contact element is secured.
Source of supply	:	The relay shall work with DC source obtained from battery.

4. GENERAL

4.1 The complete assembly shall consist of two main parts, viz. :-

(a) A relay
(b) A plug board into which a relay is plugged.

4.2 The relay shall be designed to have minimum bulk and weight consistent with the prime necessity for safety and reliability, and its construction shall be as to minimize accidental damage sustained during transit or installation.

4.3 The relay shall include a rigid base plate which shall form part of the plug-socket inter connection between the relay and its plug board.

4.4 The relay shall be enclosed in a cover which shall be so constructed that the relay shall be clearly visible for inspection. A retaining device shall be provided for the cover such that the cover cannot be removed without breaking a seal.

4.5 There shall be a minimum clearance of 0.125" between the cover and any moving part of the relay. The material of the cover and the construction of the relay shall be such that the application of a force of 30 lbs. at any point on the surface of the cover of the assembled relay shall not result in its deflection to an extent sufficient to interfere with the operation of the relay. The material shall be of such resilience that after removal of this force it shall restore to its normal condition. The cover shall be free from detrimental warping which may reduce this clearance, either from temperature or moisture changes or long term ageing or release of locked up stresses.

4.6 The cover and base-plate of the relay when assembled shall be dustproof

4.7 Surface leakage distance shall not be less than 0.125" internal and 0.25" external. Parts enclosed when the relay is attached to its plugboard may be regarded as internal.

4.8 A retaining clip as indicated in Appendix shall be provided to hold the relay securely in its plugboard without the possibility of the electrical connections becoming disconnected. The retaining clip shall not be capable of engagement in its locking position unless the relay is properly 'home' in its plugboard. It shall be captive when the plugboard is in position on the relay rack but removable, by slacking back the plugboard fixing screws.

4.9 The male portion of each inter-connection shall make a positive sliding contact with the female portion.

4.10 The permanent relay rack wiring to the plugboard shall be terminated either by soldering or crimping to a connector which shall allow up to a maximum of two wires to be connected to each termination. The maximum size of wire to be accommodated will be of overall diameter not greater than 0.110" and a conductor diameter of 0.013". The connector shall be positively locked into the plugboard but shall be capable of being released and withdrawn to permit of easy disconnection.

5. DIMENSIONS

5.1 The dimension of the relay and plugboard shall be in accordance with Appendices 'A' and 'B' of BRS Specification.

5.2 Relays with the same coding must be interchangeable.

6. MATERAILS

6.1 All materials used in the construction of the relay and plugboard shall comply with the appropriate British Standard specification unless otherwise stated.

6.2 No materials shall be used in the construction of the relay and plugboard which would cause alteration in performance during storage life, except as provided for in Clause 16.1 or which are not capable of maintaining all their essential electrical and mechanical properties during rated service life.

6.3 All non-metallic materials used in the relay and plugboard shall be non-hygroscopic, self-extinguishing free from detrimental warping, deformation, or embrittlement and, when transparent, permanently so, over the external temperature range -10°C to +70°C when the relay is continuously energized at 4 Watts steady DC

6.4 All insulating materials in contact with current carrying parts of the relay and plugboard shall comply with the following test:-

Two 1/4" diameter electrodes shall be placed 1/8" apart on a sample of the material, which is at a temperature of not more than 20°C. The sample shall then be transferred to a test chamber having a temperature of 30°C and a humidity of 85%. The insulation resistance measured at a voltage of 500V DC between the electrodes shall not then fall below 1 M. ohm. While the sample remains in the test chamber for a period of not less than 15 second.

6.5 No materials shall be used in the construction of the relay and plugboard which are capable of supporting growth of mould, or which are subject to deterioration by exposure to sunlight.

6.6 All parts both separately and in combination shall either be resistant to corrosion or be so treated as to resist corrosion. Dissimilar metals used in contact with each other shall be so chosen or protected as to minimize the effect of electro-chemical action.

6.7 All materials used in the construction of the relay and plugboard or for the impregnation of coils etc. shall be chemically and physically inert over the temperature range specified in Clause 6.3.

6.8 All soldered joints in conductors shall be made with soft solder. Non-corrosive flux shall be used in making all soldered joints and after completion of the soldering operation, any excess flux shall be removed.

6.9 All screwed fastenings shall be securely locked to prevent movement in service. Mechanical means which do not abrade the surface and produce loose pieces of materials shall be used to secure all pins, nuts, screws etc. against working loose.

6.10 Screw threads in parts fabricated of materials which do not lend themselves to successful tapping shall be formed in metal bushes.

7. MOUNTING

7.1 The plugboard shall be so designed that when the connector is inserted all live metallic parts are shrouded against accidental contact even when the relay is removed.

7.2 The spring tags on the relay shall be so constructed that in the event of the relay being plugged into a plugboard having maximum tolerances, they shall afterwards make effective contact if the relay is later plugged into a plugboard having minimum tolerances.

7.3 A registration device shall be provided to prevent an incorrectly coded relay being plugged into a particular plugboard. That portion of the registration devices carried on the relay shall be incapable of alteration without breaking a seal and shall be adequately protected against accidental breakage liable to permit the relay to be plugged into the wrong plugboard. The schedule of codes is as shown ABEJX.

The code pins on the relay insert must not extend beyond the joint face and may be upto 1.6 mm short of this.

7.4 The plugboard and relay base must be so designed as to make it impossible to establish any electrical connection between them until the registration device has correctly engaged.

7.5 The electrode potential of the material forming that part of the plugboard connector which makes contact with the spring tags of the relay shall lie between the values of -0.55 V and +0.10V, as measured against a saturated calomel electrodes in sea water at 25°C.

8. LIFE

8.1 The rated life of the relay shall be taken as 10^6 cycles when energized at three times the operate current. One cycle consists of an operation followed by a release. The rate of operation shall be taken as 250 cycles daily.

8.2 The relay shall be considered as having a possible period of upto 3 years in reasonable storage conditions prior to being brought into use without verification or examination and without any adverse effect on its rated life.

9. MAGNETIC CIRCUIT

9.1 All parts forming the magnetic circuit of the relay, i.e. armature, yoke and core with permanent magnet shall be of suitable quality magnetic materials so as to ensure consistent performance.

9.2 A non-adjustable residual stop pin of non-magnetic material shall be provided which shall be so designed that the relay continues to meet the requirements of Clause 18.2 throughout its rated life.

10. ARMATURE SUPPORTS

10.1 The armature shall be positively located so as to prevent any displacement other than that required for the proper operation of the contacts.

10.2 In relay fitted with knife edge bearings the armature shall be held in place in such a manner as to permit free movement throughout the normal stroke, but shall prevent its being displaced as a result of tests carried out under Clause 20.1.

10.3 In relays fitted with pivot bearings the armature pivots and bearings shall be of dissimilar materials possessing high resistance to corrosion under service conditions, shall fit rigidly in supports, and be suitably secured and so constructed that they cannot restrict the desired motion of the armature.

10.4 In relays fitted with pivot bearings the armature pivots and bearings shall be cylindrical and the bearings shall be not less than 0.002 inch not more than 0.004 inch larger in diameter than the pivots. The end play of the armature shall be not less than 0.01 inch and not more than 0.02 inch.

10.5 The design must be such that the breaking of the pivot shall not allow any front contact to close irregularly.

11. COILS

11.1 The coil winding shall be formed one continuous length of conductor. If joints are necessary between coil conductors, these shall be securely soldered and efficiently insulated.

11.2 Coil resistance shall not vary from the nominal value by more than ±10% measured at 20°C.

11.3 Coil impregnation is not mandatory, but if carried out, attention is drawn to paragraph 6.7.

11.4 The coil must be connected to terminal R1 and R2 in such a manner that the relay will operate when positive polarity is applied to terminal RI. The contact prongs in positions R3 and R4 must always be provided.

11.5 Coil shall be so fixed as to prevent movement with respect to its core.

12. CONTACTS

12.1 Contact ratings shall be as follows:-

All contact shall be capable of carrying 3 Amps. continuously with the relay in the full operate position without injurious effect to the contact.

Over the rated life of the relay, each contact shall be capable of making and breaking a 12V circuit having a resistive load with a switch on surge of 5 Amps., dropping to a maximum steady value of 2 Amps. after a further 100 mg (equivalent to a normal lamp circuit for a SL-17 lamp).

Over the rated life of the relay each contact shall be capable of making and breaking the current in an unquenched circuit consisting of three parallel connected relays of a type covered by this specification.

12.2 Each contact pair shall consist of at least one domed element.

12.3 Front contact shall be non-fusible and back contacts may be metal/metal.

12.4 After a contact pair has been loaded to the requirement of paragraph 12.1 over the period of rated life of the relay, contact pressures shall not be less than 50% of those stipulated in paragraph 15.1 and there shall remain a minimum distance of 0.020 inch between the metal element of the contact and the metal support of the associated non-fusible element.

13. CONTACT EQUIPMENT

13.1 The contact equipment shall comprise two front contacts and two back contacts.

14. CONTACT ASSEMBLIES

14.1 Contact springs shall be formed in such a way that their main axes lie at not more than 45° from the direction of rolling of the strip and so that abrupt changes of dimensions giving rise to high localized stresses do not occur.

14.2 The design shall be such that springs shall not be subjected to any twist about their longitudinal axis.

14.3 Contact elements shall not be out of centre with respect to each other by more than 0.02". They shall be firmly secured so that they will not become loose in service, and the material used for this purpose shall be such as not to cause corrosion.

14.4 When the last back contact is just broken all front contacts must be open by at least 0.015" and vice versa.

14.5 All similar contacts (i.e.) either front contact or back, shall function approximately simultaneously when the relay is operated or released.

14.6 In the event of any back contact remaining permanently closed as a result of fusion or locking it shall not be possible for any front contact on the relay to close when the relay is energized at up to 35% in excess of the nominal voltage. Alternatively back contacts must be non-fusible.

14.7 The relay shall be designed so as to reduce contact chatter bounce and hesitation to a minimum enclosure of the contact elements concerned. When the relay is energized at 1.5 times the operate current, the contact elements shall establish steady contact conditions is not more than 20 ms after the initial contact closure.

14.8 Contacts of the non-fusible type shall be so designed that they cannot become mechanical1y locked or fused to the metal element by abnormal flow of current, and the formation of metal elements shall be such that they will underout the non-fusible element by continual rubbing.

14.9 The contact tag of the spring shall be composed of unmated phosphor bronze.

15. CONTACT PRESSURE

15.1 The minimum contact pressures shall be as follows:-
Front contacts: 28 gram (min) when in the full operate position.
Back contacts: 28 gram (min) when in full release position.

16. CONTACT RESISTANCE

16.1 When one contact element is of non-fusible material and the relay is in the full operate or full release position a maximum contact resistance of 0.2 ohm is permitted, the resistance being measured when the contact unit concerned is carrying 100 m.a. DC. An additional 0.01 ohm is permitted when measured at the external connections through the plugboard. The contact resistance shall be measured at the manufacturer's works immediately before acceptance or dispatch.

17. TERMINAL MARKINGS

17.1 Terminal positions of the plugboard shall be marked as indicated below:-

VIEWED FROM REAR

	A	B	C	D	
1					1
2	F			F	2
3					3
4	S			S	4
5					5
6	B			B	6
7					7
8	S			S	8
R1					R2
R3	C			C	R4
	H			H	
	LH			RH	

LEGEND
F - Front contact
B - Back contact
C - Connector
H - Connector
S - Spacer

Note:- When reference is made to a terminal position in relays covered by this specification, the latter should always proceed the number.

18. OPERATING VALUES

18.1 The coil shall have a nominal resistance of 9 ohms at 20°C and shall be capable of dissipating 4 Watts steady DC continuously.

18.2 The operating values shall be determined in the following manner:

The relay shall be energized at700 milli.amps. steady D.C. in the working direction; the current shall then be gradually reduced to zero and the value at which the contacts open shall be recorded as the release values. The current shall then be increased until the relay operate and both contacts are closed, and the value at which this occurs shall be recorded as the operate value.

The operate current shall be:

Maximum - 175 milli.amp.
Minimum - 140 milli.amp.

The maximum current for full operate shall be 219 milli.amp.

The release current shall not be less than 68% of the operate current.

18.3 The voltage values corresponding to the operate currents given in Clause 18.2, in an ambient steady temperature of 20°C shall be as follows:

Maximum operate voltage - 1.733V
Minimum operate voltage - 1.134V

18.4 Immunity to 50 c.p.s. AC

(i) The relay shall not overheat with up to 30V 50 c.p.s. AC continuously applied with the relay dissipating 4 Watts DC.
(ii) The relay shall not break its front contact when 75V 50 c.p.s. AC is applied at any instant in the cycle for a period of one second at the same time as the relay is energized at 1.5 times its operate voltage.
(iii) The relay shall not make its front contact for longer than 250 milli-seconds with up to 750V 50 c.p.s. A.C. applied at any instant in the cycle. This voltage must be applied for a minimum of 0.5 seconds.

18.5 Immunity to operation by direct current of reverse polarity. The relay must not operate with applied voltage on reverse polarity up to 20 times the maximum specified pick-up (operate) voltage/current i.e. 34.66V/3.5A.

18.6 Operating Times

(i) When the relay is energized at operate voltage and current at 110% of the voltage and current, at 250% of the voltage and current and at 300% of the voltage and current with an ambient temperature of 20°C the time between

applying energy to the coil and making of particular front contact shall be recorded as pickup time.

1. 110% of P.U. Voltage 680 ms (max)
2. 250% of P.U. Voltage 190 ms (max).
3. 300% of P.U. Voltage 165 ms (max).

(ii) After the relay is energized at operate voltage and current, at 110% of the voltage and current, at 250% of the voltage and current and at 300% of the voltage and current with an ambient temperature of 20°C the time between power supply switched off and making of particular back contact shall be recorded as drop-away time.

(a) 110% of P.U. Voltage 100 ms (max).
(b) 250% of P.U. Voltage 200 ms (max).
(c) 300% of P.U. Voltage 225 ms (max).

19. ALLOCATION OF REGISTRATION CODES

19.1 Code No. ABEJX (as per BRS specification) shall apply to relays covered by this specification.

20. TYPE TESTS

20.1 Type tests shall be applied in order to prove the following features:

(i) That the relay is able to withstand 10^7 cycles of operation in the absence of electrical loading of the contacts.

(ii) That the relay is so designed to withstand shocks equivalent to a free drop of 1" on to a solid concrete surface.

(iii) That the relay is free of resonance effects under vibration of 0.005 inches amplitude at frequencies between 3 and 40 c.p.s. and of 0.001 inches amplitude at frequencies between 40 and 100 c. p.s. Under such conditions, with the relay in the full operate position, all front contacts shall give reliable contact, and with the relay in the full release position, all back contacts shall give reliable contacts. This test will be made with the vibration applied to the normally mounted plugboard with relay attached, in the vertical, side-to-side and front-to-back planes. (N.B. amplitude measurements are peak to peak).

(iv) That the essential physical characteristics of the relay are unimpaired by the application of the climatic and durability tests described in B.S 2011 (1954) table 2, classification HI (ambient temperature range -10°C to +70°C).

Following the application of these tests the relay shall be allowed recovery in accordance with paragraph 4.7.3 of BS 2011 and shall then meet the requirements of paragraphs 10, 11.5, 14, 15 and 18.2 of this specification.

(v) That the moving parts of the relay are not susceptible to freezing under the following conditions. The relay shall be subjected to six cycles of damp heat in accordance with Clause 4.7 of BS 2011 (1954) immediately following which its shall be carefully transferred without shaking to a cold chamber at a temperature not higher than -20°C for two hours; at the end of this period the relay shall function properly. The whole of this tests shall be carried out with the relay in its plugboard and in its working position. Tests shall be made with the relay energized with 219 milli.amps and also when de-energised

The relevant extracts from BS 2011 (1954) are to be followed.

20.2 When the relay is de-energised, a steadily applied torque of 2½ oz/in shall not cause the armature to move from the full release position. A steadily applied torque of 3½ oz/in shall not cause either contact to make.

20.3 The following tests shall be made to check the AC immunity of the relay:-

(i) The relay shall be energized for one hour with 30V 50 c.p.s. AC simultaneously with a dissipation of 4W DC. At the end of this period without disconnection the 50 c.p.s. alternating current shall be raised to 50V for five minutes. The winding temperature measured at any point shall not then exceed the maximum permissible for the class of insulation in accordance with BS 2757 (1956). This test shall be carried out at an ambient temperature of 70^0C.

(ii) With the relay energized at 1.5 times its pick-up voltage the application of 75V 50 c.p.s. AC applied at any instant in the cycle for a period of one second shall not cause the relay to break its front contact.

(iii) The application of up to 750V 50 c.p.s. AC applied at any instant in the cycle for a minimum duration of 0.5 second shall not cause the relay to make its front contact for longer than 250 milli-seconds.

(iv) Determination of D.C. characteristics under AC influence:

(a) Maximum 50 c.p.s. A.C. voltage super imposed in series on normal D.C. working without causing a change of more than ±7% in the operate/pick-up current shall not less than 80V.
(b) Maximum 50 c.p.s. A.C. voltage super imposed in series on normal D.C. working without causing a decrease in the minimum specified percentage release shall not be less than 80V.

20.3.1 The testing circuit for determination of DC characteristics under AC influence as stipulated in Clause 20.3(iv) shall be as shown in Appendix.

20.4 The application of reverse polarity voltage of 20 times the maximum specified PU (operate) voltage/current i.e. 34.66V/3.5A shall not result in the breaking of any back contact of the relay.

20.5 When the relay is energized at operate voltage and current, at 110% of the voltage and current, at 250% of the voltage and current and at 300% of the voltage and current with an ambient temperature of 20°C the time between applying energy to the coil and making of particular front contact shall be recorded as pickup time.

(a) 110% of P.U. Voltage 680ms (max)
(b) 250% of P.U. Voltage 190ms (max)
(c) 300% of P.U. Voltage 165ms (max)

20.6 After the relay is energized at operate voltage and current, at 110% of the voltage and current, at 250% of the voltage and current and at 300% of the voltage and current with an ambient temperature of 20°C, the time between power supply switched off and making of particular back contact shall be recorded as drop-away time.

(a) 110% of P.U. Voltage 100 ms (max)
(b) 250% of P.U. Voltage 200 ms (max).
(c) 300% of P.U. Voltage 225 ms (max)

21. ACCEPTANCE TESTS

21.1 The relay shall be subjected to the following tests:-

(i) A test to check that the relay complies with Clause 18.2.
(ii) A test voltage of 1000V AC (r.m.s.) of sine-wave form at 50 c.p.s. applied for one minute between all metallic parts of the relay and other metallic parts insulated there from. This requirement shall include tests between coil windings and metallic parts.
(iii) A test to ensure that the relay does not operate with the sudden application of 120V 50 c.p.s. A.C.
(iv) A test that no back contact of the relay breaks on the application of 34.66V D.C. when applied in the reverse sense.
(v) A test on the contact spring to ensure that the physical gap is such that no current flows during the transit of the relay armature when all back contacts (connected in parallel) are connected in series with all front contacts (connected in parallel) and a voltage of 500V D.C. is applied. The relay shall be energized at its operate voltage. The device to be used in making this test shall have a response time of not more than 250 micro-seconds and shall give a positive indication in the event of current passing for that period.

22. LABELLING AND MARKING

22.1 A nameplate giving the following information shall be attached to the relay in a conspicuous position:-

(i) Manufacturer's name
(ii) Serial number of the relay.
(iii) P.U. Voltage, current in ma
(iv) D.A Voltage, current in ma
(v) Date tested (month and year is sufficient).
(vi) Tested by ……....

22.2 This nameplate shall be so situated that it is readily visible when the relay is in its installed position, and shall be securely fixed in such a manner that it does not obscure the moving parts and cannot interfere with the operation of the relay.

22.3 Provision shall be made on the exterior of the relay cover for the attachment of a readily removable label for circuit identification. This label shall be in accordance with Appendix 'B' and, when in position, it shall no obscure the moving parts of the relay.

22.4 The coil shall have attached to it, secured by the outside binding, a tag which shall be clearly and indelibly marked with the following particulars:-

(i) Manufacturer's reference.
(ii) Resistance (nominal) at 20^{o}C.

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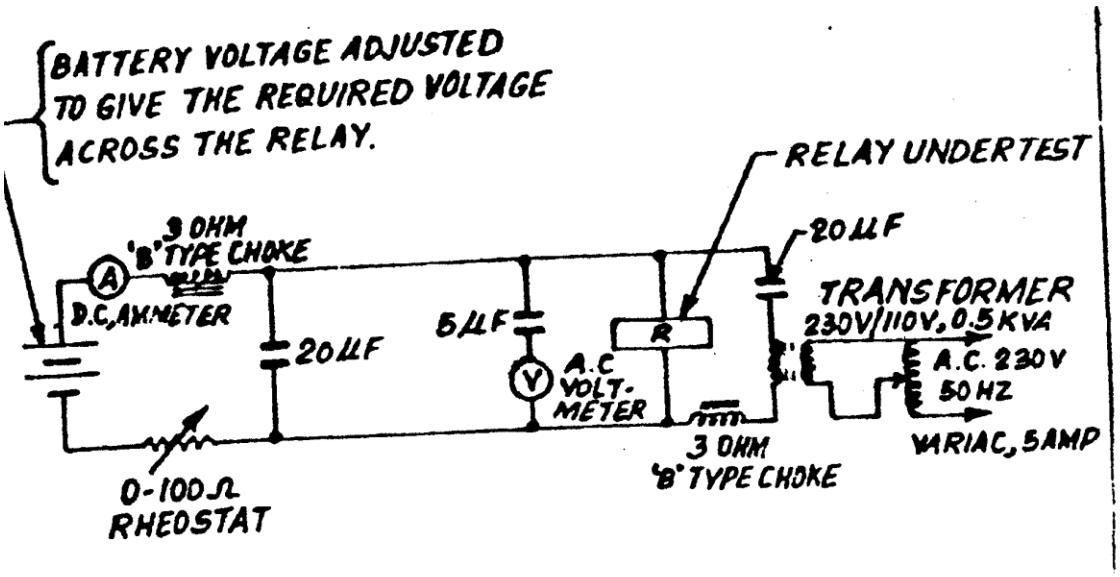

3. TO DETERMINE THE DROP-AWAY/RELEASE CURRENT UNDER 80V, A.C, 50 HZ VOLTAGE INFLUENCE, THE RHEOSTAT SHALL BE READJUSTED.

2. TO DETERMINE THE PICKUP/OPERATE CURRENT OF RELAY UNDER 80V, A.C, 50 HZ VOLTAGE INFLUENCE, THE RHEOSTAT SHALL BE ADJUSTED.

1. A.C SUPERIMPOSED VOLTAGE SHALL BE ADJUSTED TO STIPULATED VALUE OF 80V, A.C, 50 HZ ACROSS THE RELAY UNDER TEST, BY VARYING THE VARIAC.

NOTE

R. D. S. O.

CIRCUIT FOR DETERMINATION OF D.C. CHARACTERISTIC UNDER A.C. INFLUENC

APPENDIX

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मुख्य संकेत एवं दूरसंचार अभियन्ता, मुख्य संकेत एवं दूरसंचार अभियन्ता (निर्माण), मुख्य संकेत एवं दूरसंचार अभियन्ता (प्रॉजेक्ट)	**Chief Signal & Telecom Engineer, Chief Signal & Telecom Engineer (Const.), Chief Signal & Telecom Engineer (Project)**
मध्य रेलवे, मुम्बई सी.एस.टी. – 400 001	Central Rly, Mumbai CST – 400 001
पश्चिम रेलवे, चर्च गेट, मुम्बई – 400 020	Western Rly, Churchgate, Mumbai – 400 020
पूर्व रेलवे, फेयरली प्लेस, कोलकाता – 700 001	Eastern Rly, Fairlie Place, Kolkata – 700 001
दक्षिण पूर्व रेलवे, गार्डन रीच, कोलकाता – 700 043	South Eastern Rly., Garden Reach, Kolkata – 43
उत्तर रेलवे, बड़ौदा हाउस, नई दिल्ली – 110 001	Northern Rly., Baroda House, New Delhi – 01
पूर्वोत्तर रेलवे, गोरखपुर – 273 012	Northeastern Rly., Gorakhpur – 273 012
पूर्वोत्तर सीमान्त रेलवे, मालीगांव, गुवाहाटी – 780 011	North Frontier Rly., Maligaon, Guwahati – 011
दक्षिण रेलवे, पार्क टाउन, चेन्नई – 600 003	Southern Rly., Park Town, Chennai – 600 003
दक्षिण मध्य रेलवे, सिकन्दराबाद – 500 371	South Central Rly, Rail Nilayam, Secunderabad– 71
पूर्व मध्य रेलवे, हाजीपुर – 841 101	East Central Railway, Hazipur - 841 101
उत्तर पश्चिम रेलवे, जयपुर – 302 006	North Western Railway, Jaipur – 302 006
पूर्व तटीय रेलवे, ग्राउन्ड तल, उत्तरी ब्लाक, समन्त विहार, भुवनेश्वर – 17	East Coast Railway, Rail Vihar, Ground floor, North Block, Samant Vihar, Bhubaneswar – 17
उत्तर मध्य रेलवे, गंगा काम्पलेक्स, सूबेदारगंज, इलाहाबाद	North Central Railway, Ganga Complex, Subedarganj, Allahabad.
दक्षिण पश्चिम रेलवे, मुख्य कार्यालय, क्लब रोड, केशवपुर, हुबली – 580 023	South Western Railway, Main Office, Club Road, Keshavpur, Hubli – 23
पश्चिम मध्य रेलवे, द्वितीय तल, डी.आर.एम. ऑफिस, जबलपुर – 482 001	West Central Railway, IInd Floor, DRM Office, Jabalpur – 482 001
दक्षिण पूर्व मध्य रेलवे, आर0ई0 ऑफिस कॉम्पलेक्स, बिलासपुर – 495 004	South East Central Railway, R. E. Office Complex, Bilaspur – 495 004
मेट्रो रेलवे, 33/1, जवाहर लाल नेहरू रोड, कोलकाता – 700 071	Metro Railway, 33/1, Jawaharlal Nehru Road, Kolkata – 700 071
कोर , नवाब युसुफ रोड, सिविल लाइन्स, इलाहाबाद – 211 001	CORE, Nawab Yusuf Road, Civil Lines, Allahabad –211 001
निदेशक/इरिसेट, तारनाका रोड, लालागुडा, पी. ओ. सिकन्दराबाद – 17	Director/IRISET, Tarnaka Road Lallaguda, P.O. Secunderabad – 17

Sub: Amendment No. 1 to the Specification No. RDSO/SPN/084 Version 2.0 For Miniature, Tractive Armature, A.C. Immune, D.C. Biased Track Relay, Plug-in Type for Railway Signalling Purposes, Style 'QBAT', 9 ohm.

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In compliance to Vigilance Cell/RDSO's letter No. 13/Vig/Policy dtd.26.07.16 & 08.09.16, Amendment No. 1 to the Specification No. RDSO/SPN/084 Version 2.0 For Miniature, Tractive Armature, A.C. Immune, D.C. Biased Track Relay, Plug-in Type for Railway Signalling Purposes, Style 'QBAT', 9 ohm is hereby issued with the approval of competent authority for information & implementation please.

DA: Copy of Amendment No. 1 to the
Specification No. RDSO/SPN/084 Version 2.0

(V. K. Agarwal)
Jt. Director/Signal
for Director General/Signal

Copy to :-

कार्यकारी निदेशक / गुणवत्ता आश्वासन / अ0अ0मा0सं0, लखनऊ	Executive Director/QA/S&T/RDSO/Lucknow
निदेशक / गुणवत्ता आश्वासन / सिगनल एवं दूरसंचार, / अ0अ0मा0सं0, निकट इरकॉट बिल्डिंग, शंकर मार्केट के पीछे, शिवाजी ब्रिज, नई दिल्ली – 110 001	Director/QA./S&T/RDSO, 1st Floor, Near IRCOT Building, Behind Shanker Market, Shivaji Bridge, New Delhi – 110 001
निदेशक / गुणवत्ता आश्वासन / संकेत एवं दूरसंचार, / अ0अ0मा0सं0, प्रथम तल, न्यू एनेक्सी बिल्डिंग, चर्चगेट, पश्चिम रेलवे, मुम्बई – 400 020	Director/QA./S&T/RDSO, 1st Floor, New Annexe Building., Western Railway, Churchgate, Mumbai – 400 020
निदेशक / गुणवत्ता आश्वासन / सिगनल एवं दूरसंचार, / अ0अ0मा0सं0, भूतल, डी0आर0एम0 ऑफिस, बंगलोर – 560 023	Director/QA./S&T/RDSO, Ground Floor, DRM Office, Bangalore – 560 023
निदेशक / गुणवत्ता आश्वासन / सिगनल एवं दूरसंचार, / अ0अ0मा0सं0, चौथी मंजिल, 17 एन.एस. रोड, वैस्ट विंग, फेयरली प्लेस, कोलकाता – 700 001	Director/QA./S&T/RDSO, 4th Floor, 17 N.S. Road, West Wing, Fairlie Place, Kolkata – 700 001
निदेशक / गुणवत्ता आश्वासन / सिगनल एवं दूरसंचार, / अ0अ0मा0सं0, हसनपुरा रोड, जयपुर – 302 006	Director/QA/S&T/RDSO, Hasanpura Road, In Front of Railway Hospital, JAIPUR – 302 006

1.	M/s. AEW Technology LLP, 32/J, Sahitya Parishad Street, Ground Floor, Kolkata – 700 006
2.	M/s Crompton Greaves Ltd., Signalling Relay Unit,11-B, Industrial Area No. 1, Pithampur, Disstt. Dhar – 454775
3.	M/s. Eldyne Electro Systems Pvt. Ltd., EP-14/1, Praffula Kanan (Off. VIP Road), Krishanpur, Kolkata – 700 059
4.	The Chief Workshop Manager, Signal Workshop, Southern Railway, Podanur – 641 023
5.	M/s. Instrumentation Ltd., Signalling Division, Kota – 324 005. (RAJASTHAN)
6.	M/s. Cosine Comm. & Electronics (P) Ltd., Plot No. 150, C&F, IDA Phase-II, Cherlapally, Hyderabad – 51
7.	M/s. Orient Relay & Equipments, 69/1/7, Diamond Harbour Road, Kolkata – 700 038.
8.	M/s. Hytronics Enterprises, 24-B, Electronics Complex, Kushaiguda, Hyderabad – 500 762.
9.	M/s. Ultra Electronic Pvt. Ltd., 32B, Ganesh Chandra Avenue, Ground Floor, Kolkata – 700 013.
10.	M/s. Westinghouse Saxby Farmer Ltd., 17, Convent Road, Entally, Kolkata – 700 014.
11.	The Chief Workshop Manager, Signal Workshop, N.E. Railway, Gorakhpur – 273 008
12.	M/s. Demson & Co., A-16, SIDCO Industrial Estate, Villivakkam, Chennai – 600 049.

DA: Copy of Amendment No. 1 to the
Specification No. RDSO/SPN/084 Version 2.0

(V. K. Agarwal)
Jt. Director/Signal
for Director General/Signal
25/07/17

Amendment No. 1

To

RDSO Specification No. RDSO/SPN/084 Version 2.0

For

Miniature, Tractive Armature, A.C. Immune, D.C. Biased Track Relay, Plug-in Type for Railway Signalling Purposes, Style 'QBAT', 9 ohm

Following new clause is added to the Specification No. RDSO/SPN/084 Version 2.0 for Miniature, Tractive Armature, AC Immune, D.C. Biased Track Relay, Plug in Type for Railway Signalling Purposes (Style - 'QBAT', 9 ohm).

Clause No. 23

"All the provisions contained in RDSO's ISO procedures laid down in Document No. QO-D-7.1-11 dated 19.07.2016 (titled "Vendor Changes in approved status") and subsequent versions/amendments thereof, shall be binding and applicable on the successful vendor/vendors in the contracts floated by Railways to maintain quality of products supplied to Railways".

End of Amendment No. 1